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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/577,664

**Applicant(s)**

LI, HUI

**Examiner**

FRED A. CASCA

**Art Unit**

2617

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-846)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to applicant's amendment filed on November 22, 2010. Claims 12-30 are still pending in the present application. **This Action is Made FINAL.**

#### **Claim Rejections - 35 USC § 112**

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 29-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The new independent claim 29 recites the limitations "information from a first radio station to a radio access point via at least one intermediate radio station" and "receiving a request at a base station from the first radio station, to establish a communication path to the radio access point". These limitations have not been described in the specification.

#### **Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 12-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elliot et al (US 6,685,476), in view of Song et al (US 2004/0146013 A1), in view of Shin (6,549,543 B1).

Referring to claim 12, Elliot discloses a method for determining a path to convey information from a first station to a second station via at least one intermediate station (abstract and Fig. 1-6), the information being conveyed such that the first station and each intermediate station transfer the information to an adjacent station in a direction of the path, from a transferor radio station to a transferee radio station (Fig. 1-6, Col. 4, lines 4), comprising:

determining at least a portion of the path upon request of the first station (Col. 4, lines 38-54, "routing algorithm", "SPF", "DV", "AODV" 13);

transmitting path identification information from the installation to the first radio station transmitting to one or more intermediate radio station the path identification information (Co. 5, lines 40-60); , information identifying an other intermediate radio station and information (Co. 5, lines 40-60).

Elliot is silent on dividing a frequency band into a plurality of subbands for communication between the radio stations, with at least one subband being assigned to each radio station and identifying the subband assigned to it and/or identifying the first radio station and information identifying the subband assigned to it and/or identifying the second radio station and information identifying the subband assigned to it.

Song discloses dividing a frequency band into a plurality of subbands for communication between the radio stations, with at least one subband being assigned to each radio station (par. 05, note that "FDMA" and "TDMA" systems divide frequency

bands into subbands where each access point is allocated a bandwidth, and each assigned/registered mobile terminal is assigned a portion of that frequency when the mobile terminal is in communication); identifying the subband assigned to it and/or identifying the first radio station and information (Par. 5, note that in WLAN networks, each access point is assigned a portion of frequencies/bandwidth which different from adjacent access points) identifying the subband assigned to it and/or identifying the second radio station and information identifying the subband assigned to it (Par. 5).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Song in the format claimed, for the purpose of providing an efficient communication system.

Elliot is silent on a radio installation determining at least a portion of a path for transmission and transmitting the path information to the a radio installation doing the determining of the path and transmitting it to the first radio station in the format claimed.

Shin discloses a radio installation (Mobile Switching Center 50) determining at least a portion of a path for transmission and transmitting the path information to the a radio installation doing the determining of the path and transmitting it to the first radio station in the format claimed (Figures 1-3, Col. 4, lines 45-67, “a mobile switching center 50 for determining a communication path in accordance with a communication service required by the mobile station 20, an interworking function device 60, connected to the mobile switching center 50, for interworking with an public switched telephone network 100 or an X.25 network 200 or an Internet 300, and a router 310 for performing a routing operation so that the interworking

function device 60 is connected to the Internet 300”, note that the MSC (radio installation) determines at least the portion of communication from the mobile device to the BSC).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Song in the format claimed, for the purpose of assigning the path determination to a central element and thus providing an efficient communication system.

Referring to claim 13, the combination of Elliot/Song/Shine discloses the method according to claim 12, and further disclose in addition to the path identification information, the radio installation transmits to the first radio station: information identifying the transferee radio station for the first radio station, and information identifying the subband assigned to its transferee radio station, and the radio installation transmits to each intermediate radio station: the path identification information, information identifying the transferee radio station, and information identifying the subband assigned to the transferee radio station (Song, Fig. 1-3, note that identifying information with respect to subbands allocated to access points and downlink and uplink mobile terminal is inherent in the WLANs so that the same frequency or subband is not assigned to different radio nodes).

Referring to claim 14, the combination of Elliot/Song/Shine discloses the method according to claim 13, and further disclose the radio installation transmits to each intermediate radio station information identifying the transferor radio station for the

intermediate radio station, and information identifying the subband assigned to the transferor radio station (Fig. 1-3, note that identifying information with respect to subbands allocated to access points and downlink and uplink mobile terminal is inherent in the WLANs so that the same frequency or subband is not assigned to different radio nodes).

Referring to claim 15, the combination of Elliot/Song/Shine discloses the method according to claim 12, wherein, the radio installation transmits the path identification information to the second radio station (Fig.1 and Par. 7).

Referring to claim 16, the combination of Elliot/Song/Shine discloses the method according to claim 15, and further disclose the radio installation also transmits to the second radio station information identifying the transferor radio station for the second radio station and information identifying the subband assigned to the transferor radio station (Fig. and see the rejection of claim 1 above).

Referring to claim 17, the combination of Elliot/Song/Shine discloses the method according to claim 12, and further disclose the radio stations of the radio communications system are combined into groups, each group has a single representative radio station, and the radio installation only communicates with the representative radio stations in transmitting the path identification information, the information identifying the radio station and the

information identifying the subband assigned on it (Fig. 1-3 and see the rejection of claim 1 above).

Referring to claim 18, claim 18 is rejected for the same reason as that of claim 17.

Claim 19 is rejected for the same reasons as claim 17.

Claims 20-24 are rejected for the same reasons as claims 13-16.

Claims 25-27 are rejected for the same reasons as claims 12 and 17-19).

Claim 28 is rejected for the same reason as claim 12.

6. Claim 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elliot et al (US 6,685,476), in view of Song et al (US 2004/0146013 A1), in view of Shin (6,549,543 B1) and still further in view of Reed et al (US 2003/0109217 A1).

Referring to claim 29, Elliot discloses a method for determining a path to convey information from a first station to a second station via at least one intermediate station (abstract and Fig. 1-6), the information being conveyed such that the first station and each intermediate station transfer the information to an adjacent station in a direction of the path, from a transferor radio station to a transferee radio station (Fig. 1-6, Col. 4, lines 4), comprising:

determining at least a portion of the path upon request of the first station (Col. 4, lines 38-54, "routing algorithm", "SPF", "DV", "AODV" 13);

transmitting path identification information from the installation to the first radio station transmitting to one or more intermediate radio station the path identification



information (Co. 5, lines 40-60); , information identifying an other intermediate radio station and information (Co. 5, lines 40-60).

Elliot is silent on dividing a frequency band into a plurality of subbands for communication between the radio stations, with at least one subband being assigned to each radio station and identifying the subband assigned to it and/or identifying the first radio station and information identifying the subband assigned to it and/or identifying the second radio station and information identifying the subband assigned to it.

Song discloses dividing a frequency band into a plurality of subbands for communication between the radio stations, with at least one subband being assigned to each radio station (par. 05, note that “FDMA” and “TDMA” systems divide frequency bands into subbands where each access point is allocated a bandwidth, and each assigned/registered mobile terminal is assigned a portion of that frequency when the mobile terminal is in communication); identifying the subband assigned to it and/or identifying the first radio station and information (Par. 5, note that in WLAN networks, each access point is assigned a portion of frequencies/bandwidth which different from adjacent access points) identifying the subband assigned to it and/or identifying the second radio station and information identifying the subband assigned to it (Par. 5).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Song in the format claimed, for the purpose of assigning the path determination to a central element and thus providing an efficient communication system.

Elliot is silent on a radio installation determining at least a portion of a path for transmission and transmitting the path information to the a radio installation doing the determining of the path and transmitting it to the first radio station in the format claimed.

Shin discloses a radio installation (Mobile Switching Center 50) determining at least a portion of a path for transmission and transmitting the path information to the a radio installation doing the determining of the path and transmitting it to the first radio station in the format claimed (Figures 1-3, Col. 4, lines 45-67, “a mobile switching center 50 for determining a communication path in accordance with a communication service required by the mobile station 20, an interworking function device 60, connected to the mobile switching center 50, for interworking with an public switched telephone network 100 or an X.25 network 200 or an Internet 300, and a router 310 for performing a routing operation so that the interworking function device 60 is connected to the Internet 300”, note that the MSC (radio installation) determines at least the portion of communication from the mobile device to the BSC).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Song in the format claimed, for the purpose of assigning the path determination to a central element and thus providing an efficient communication system.

Elliot is silent on whether or not the information is from a first radio station to a radio access point via at least one intermediate radio station and the receiving of the request is at a base station from the first radio station, to establish a communication path to the radio access point, as claimed.

Reed discloses information being requested from a first radio station to a radio access point via at least one intermediate radio station and the receiving of the request is at a base

station from the first radio station, to establish a communication path to the radio access point (Figures 1-3 and Par. 22, 24 and 27).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the above combination in the format claimed, for the purpose of assigning the path determination to a central element and thus providing an efficient communication system.

### **Response to Arguments**

7. Applicant's arguments with respect to claims 12-30 have been considered but are not persuasive.

In response to arguments that the features of claims 29 and 30 are described in the application in paragraphs [0033] and [0034] of the substitute specification. Particularly, lines 1 and 2 of paragraph [0033], the examiner respectfully disagrees.

Paragraphs [0033] and [0034] of the applicant's publication reads as follows:

“[0033] Below it is assumed that the WLAN uses an OFDM transmission method. In this method, a frequency band is subdivided into a plurality of subbands. The subbands are then dynamically assigned to the mobile stations on the subscriber side for communication. In this case, one or more subbands can be assigned to a mobile station, with the subbands then usually being used by the mobile station for sending data to the neighboring stations. However, it is also possible, in order to send data to a neighboring mobile station, to use the subbands assigned to this mobile station.

[0034] In the example considered in FIG. 1, the mobile station MN11 intends sending data to the radio access point AP. Because this point is located outside its radio range, a

path must previously have been determined between the mobile station MN11 and the radio access point AR. For this purpose, it is assumed that the base station BS is conversant with the neighboring relationships between the mobile stations, which means the topology of the network.”

In the above two paragraphs, the limitations “information from a first radio station to a radio access point via at least one intermediate radio station” and “receiving a request at a base station from the first radio station, to establish a communication path to the radio access point” are not found. If the applicant interprets the contents of the above paragraphs 33 and 34 to mean the limitations of the claims, the applicant is requested to explain how those limitations can impliedly be found in these paragraphs.

With regards to the rejection of claims under 103 (a) the applicant presents the following:

“Elliot et al. (US 6685476) deals with the “routing loops” and their negative effects on networks. According to Elliot, in order to avoid routing loops, a Time-to-Live (“TTL”) is assigned to each data packet. The TTL value is decremented as the packet is routed. Once the TTL value reaches a value of “0”, the packet is discarded. Thus, if the packet is in a loop, the loop is terminated when the packet is discarded. However, Elliot describes that the TTL value is usually set to its maximum value, which can be high. That is, the TTL value is not tailored to network conditions (column 1, line 20 - column 2, line 3). Due to the high value, it can take a long time before a packet is discarded. The packet can remain in a loop for some time. During this time, any looping packets present in the network increase the overall network load. Elliot aims at overcoming the drawbacks of the prior art by automatically setting TTL values/times in network

nodes that are aware of network conditions (column 2, lines 6 - 10). Elliot accomplishes this by setting the TTL for a data packet based on an assumed life-time for the packet, which is in-turn based on a determined route over which the data packet might travel (column 2, lines 15 - 19). Elliot describes (column 4, line 28 to column 7, line 19) how, using routing algorithms, the network topology can be ascertained by the different routers and routing tables for routing data can be constructed and maintained. Elliot concentrates on resolving issues relating to routing loops in networks, even networks having some routes with a wireless part.”

In the above argument the applicant only describes some of the teachings of Elliot. The applicant has not indicated what Elliot does not teach. In other words, the applicant has not rebutted the examiner's rejection applying Elliot. Thus, the examiner asserts that the rejection of claims using Elliot as described in the 103(a) rejection above is maintained.

Applicant’s arguments that “Song deals with the problems caused by feedback in wireless systems having relay nodes. Song indicates in paragraph 0005, that up/down links can be set to different frequencies in order to isolate the signals transmitted on them from each other during simultaneous transmission. Song describes that frequency bands can be further subdivided into channels. A person skilled in the art upon coming across the teachings of Song, would be made aware that there exist at least two different types of multiple access, namely FDMA and TDMA and their respective mechanisms of functioning. Song clearly states that the aim of the Song invention is to extend a coverage area that does not require a separate assignment of frequencies (paragraph 0011) In order to provide efficient use of frequency spectrum in TDD,” has been fully considered but they are not persuasive.

In the above argument the applicant only describes some of the teachings of Song. The applicant has not indicated what claim limitation Song does not teach. Thus, the examiner asserts that Song teaches the claimed limitations as indicated in the complete rejection of 103(a) with respect to Song.

In response to arguments that Song is teaching away, the examiner respectfully disagrees and asserts Song's teachings of dividing a frequency into smaller subbands is the reason that Song is combined with Elliot. The examiner asserts that the disclosures of both Elliot and Song are well known old fundamental communication concepts. The applicant's arguments of Song teaching away not rational because Song does not indicate an disadvantages to frequency band division, and neither does Elliot. Thus, the Song's teaching of frequency band into smaller subbands is an advantage as described in the rejection.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the examiner respectfully disagrees with the applicant Song's disclosure of dividing a frequency band into smaller subbands would serve as a great advantage by using the allocated frequency more efficiently. An efficient use of the communication resources such as frequency would reduce cost.

In response to arguments that “Assuming now that a person skilled in the art were to somehow combine the teachings of Song (and clearly ignore the fact that Elliot does not hint or suggest at using frequencies and in particular in dividing them) into those of Elliot, he would take Song’s teaching and implement a TDD solution into the mechanism for determining the TTL in Elliot. A completely different solution from the present invention would result. The same applies if one forced the teachings of Shin to be combined into those resulting from the combination of Elliot and Song,” the examiner respectfully disagrees. The examiner asserts that each of the references Elliot, Song and Shin teach different limitations claimed by the applicant. The applicant’s claimed limitation, each taught by either of Elliot, Song or Shin, are well known and fundamental communication concepts and an artisan would understand each of these limitation. And since the cited prior art teaches uses these limitations in a similar field of wireless/mobile communication, an artisan would be able to also put them together and come up the applicant’s claimed invention.

### **Conclusion**

8. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred A. Casca whose telephone number is (571) 272-7918. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard, can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred A. Casca/

Examiner, Art Unit 2617

/Patrick N. Edouard/

Supervisory Patent Examiner, Art Unit 2617